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RIO FRUIT CONCENTRATE

for a

NATURAL FRUIT DRINK

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Samples of the Rio fruit concentrate and information can be obtained by writing to

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Assistant Director
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RIO FRUIT CONCENTRATE FOR A NATURAL FRUIT DRINK

by
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INTRODUCTION

The production and marketing of synthetic beverages contribute substantially to the financial success of many firms. However, many families now tend to seek out and purchase highly nutritional beverages made from the pure fruit juices and other natural products.

This publication is intended to apprise the food industry of opportunities for the production of a new product developed by USDA's Agricultural Research Service. The publication also provides a medium through which the field stations of the Southern Utilization Research and Development Division (SU) can better serve the future needs of the food industry for the benefit of the farmer, the processor, and the consumer.

THE PRODUCT

Rio fruit concentrate contains grapefruit juice, lemon juice concentrate, strawberry puree, and sugar, and can be produced without elaborate concentrate equipment. This concentrate is nutritious, wholesome, and a highly acceptable natural fruit product. It is a sweetened 100-percent natural fruit blend that contains no artificial flavoring or coloring.

Food scientists at SU's U. S. Food Crops Utilization Research Laboratory in Weslaco, Texas, developed the Rio fruit concentrate. Taste tests indicate that this product will be readily accepted by consumers who desire a beverage derived from natural fruits. This new product provides the industry with an opportunity to diversify their present line of convenience items, or to initiate the production and marketing of a convenience item with multiple-use potential.

Recently scientists at SU's U. S. Fruit and Vegetable Products Laboratory in Winter Haven, Florida, demonstrated that the fruit concentrate can be converted to an attractively colored crystalline product by foam-mat drying without deleteriously affecting the quality. This latter product however, is still in the preliminary stages of development.

OUTLETS - USES

The continuing increase of married women in gainful employment at the same time that there is an increase both in the average size of families and of average income provides fertile ground for planning future markets.

The Rio fruit concentrate, made from natural fruit juices and strawberry puree represents features of value to these future markets -- convenience for the working wife, naturalness for specialty products, and nutrition, purity, and flavor for children of the family. Other segments of the rapidly growing food services industry offer additional enticement -- air travel, snack bar feeding, institutional, and vending machines.

The versatile Rio fruit concentrate could provide diversification in all of these lines. It can also be marketed in the diluted form as a refreshing pure fruit drink, or as a carbonated beverage.

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The consumer can use it in the form of a frozen concentrate to prepare party punches, wholesome snacks for the family in the form of fruit-ice popsicles, sherberts, ice cream topping, breakfast cereal topping, or an attractively flavored cake of unusual texture. It may even be used in preparing enjoyable and flavorful cocktails. Discerning taste-test panelists rated Rio fruit concentrate to be at least as acceptable as the leading commercial brands of punch.

The production of the crystalline fruit concentrate by foam-mat drying will also increase opportunities for more diversified uses.

PROCESS DESCRIPTION

The ingredients used for preparing Rio fruit concentrate are:

Grapefruit juice: Freshly extracted or canned single-strength, heat-processed grapefruit juice.

Lemon concentrate: Hot-pack lemon juice concentrate containing 325 g. per liter of citric acid.

Strawberry puree: Frozen strawberries thawed and passed through a paddle finisher equipped with an 0.027-inch screen to remove seeds.

Sugar: Sugar (commercial grade).

Formulation 1/:

	Pounds
Grapefruit juice, single strength	3,300
Strawberry puree, strained	1,190
Lemon concentrate, acid 27.3 percent, Brix 37.4°	560
Sugar, granular, commercial	3,520

After blending in a stainless steel tank, the material is passed through a "flash" or rapid heat exchanger, and heated to approximately 190° F. Using a standard filling machine, the concentrate is poured into enameled cans that are sealed, and inverted for approximately 1 minute before cooling in running tapwater. After cooling, the cans are placed in frozen storage. Because the product is heat-treated, it is not necessary to freeze it rapidly. The flavor of the product withstands heat stabilization of flash pasteurization, and the flavor as well as the color is retained by frozen storage for indefinite periods.

1/ These quantities of materials will yield about 800 gallons of the fourfold concentrate.

EQUIPMENT

Based on the use of commercially available juices, concentrates, and purees, major units of equipment required for the production of the concentrate are shown below:

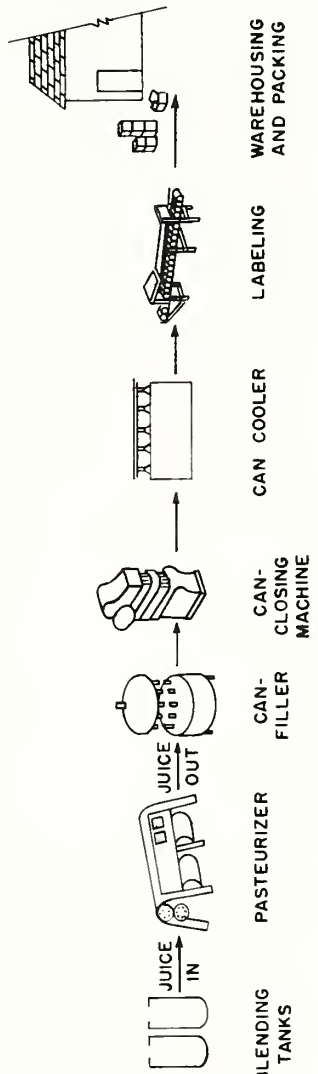

FIGURE I. FLOWSHEET SHOWING STEPS IN THE CANNING OF RIO FRUIT PUNCH.

Processing firms currently manufacturing and packaging citrus juice may readily undertake the production of the punch with virtually no capital investment for equipment. Production of the Rio fruit concentrate offers the opportunity of using

existing equipment more efficiently during off-season operation.

For a new plant, equipment manufacturers can provide cost information and efficient lay-outs for the production of the new product.

ECONOMICS

In 1967, USDA technologists estimated that raw material costs range from $2.90 to $3.10 per case of forty-eight 6-ounce cans of the frozen concentrate. Processing costs will depend on the availability of equipment and the time at which the production is scheduled. Such costs may range from $1.60 to $1.85 per case. Cans, cartons, labels, power, depreciation, and labor are included in the estimated processing costs.

The manufacture of the concentrate allows for the use of non-uniform fruits and those that may be unacceptable for fresh market sales. Citrus juice and frozen strawberries are available in various parts of the United States. Frozen strawberries have been recently reported as available in Mexico.

Information on the availability of equipment and cost estimates for the production of the crystalline fruit concentrate product by foam-mat drying will be furnished upon request.

REFERENCE

Lime, B.J., and Griffiths, F.P. Factors Affecting Acceptance of Grapefruit Drinks. Rio Grande Valley Hort. Soc. 20: 83-93. 1966. (Reprint No. 3284).